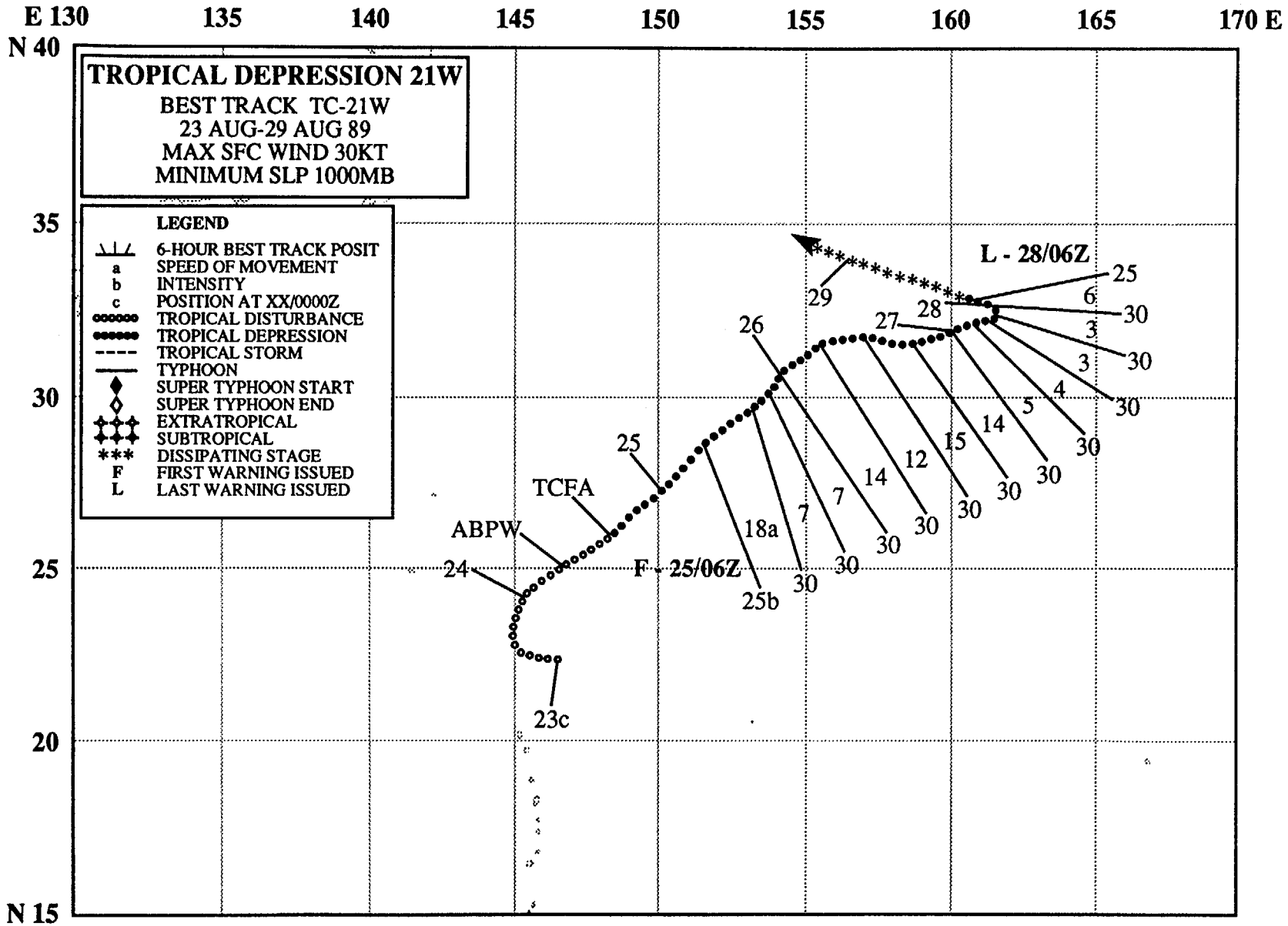
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TROPICAL DEPRESSION 21W
BEST TRACK TC-21W
23 AUG-29 AUG 89
MAX SFC WIND 30KT
MINIMUM SLP 1000MB
LEGEND
6-HOUR BEST TRACK POSIT
a SPEED OF MOVEMENT
b INTENSITY
c POSITION AT XX/0000Z
TROPICAL DISTURBANCE
TROPICAL DEPRESSION
TROPICAL STORM
TYPHOON
SUPER TYPHOON START
SUPER TYPHOON END
EXTRATROPICAL
SUBTROPICAL
*** DISSIPATING STAGE
F FIRST WARNING ISSUED
L LAST WARNING ISSUED
L - 28/06Z
F - 25/06Z
TCFA
ABPW
23c
24
25
25b
18a
26
27
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TROPICAL DEPRESSION 21W

The eighth and final tropical cyclone of August, Tropical Depression 21W developed northeast of the Mariana Islands. Because JTWC recognized that intensification would be inhibited by strong vertical wind shear, only Tropical Depression Warnings were issued.

As Tropical Storm Roger (20W) passed through the southern Ryukyu Islands on 23 August, a disturbance formed on the eastern end of the monsoon trough which extended eastward across the northern-most Mariana Islands. The 24 August Significant Tropical Weather Advisory mentioned the disturbance and its poor potential for development. During the night, the disturbance became better organized and its potential for development was upgraded to fair. A Tropical Cyclone Formation Alert was issued at 241200Z, after the disturbance continued to develop during the normal diurnal convective minimum. Further development (Figure 3-21-1) led to the first

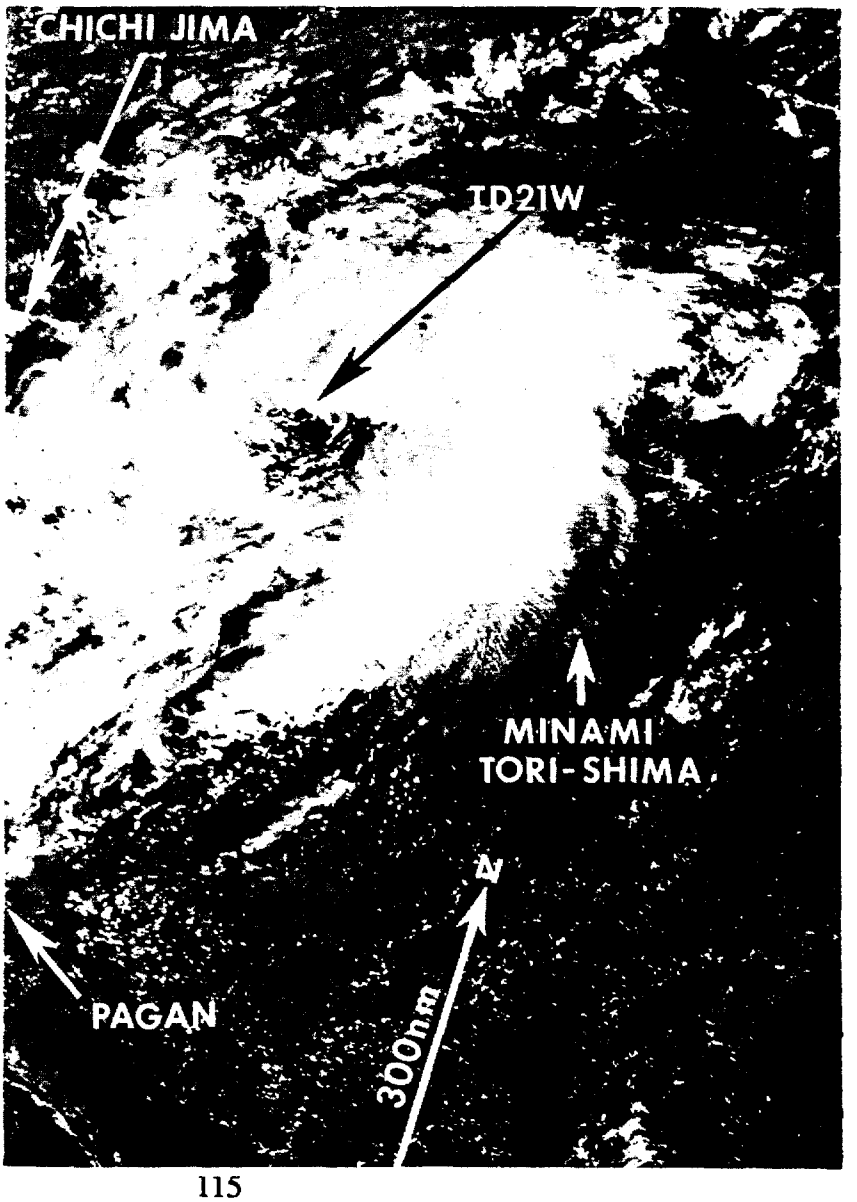

Figure 3-21-1. Convective organization continues to increase after the Alert was issued (242242Z August DMSP visual imagery).

warning at 250600Z. A Tropical Depression Warning was issued rather than a tropical cyclone warning since the low-level circulation was displaced to the west of the deep convection and the system was not expected to be long-lived because of strong westerly wind shear aloft.

While the upper-level winds restricted the tropical cyclone's outflow, the deep southwesterly monsoonal flow carried the low-level circulation center on an unusually long track to the northeast. Late on 25 August, Tropical Depression 21W slowed abruptly as it moved into an area of weaker vertical shear. Coincidentally, the low-level circulation center moved beneath the central cloud mass, and the intensity increased to 30 kt (15 m/sec).

On 26 August, the depression accelerated in response to a surge in the southwest monsoon. Shortly thereafter it started interacting with a shear zone that trailed from a weak cold front. Tropical Depression 21W appeared to be on the verge of transitioning to an extratropical system; however, on 27 August, mid-level steering weakened, the system stalled, and central convection reappeared.

Within a day, unfavorable conditions returned aloft, as northwesterlies moved over the system and began once more to strip away the central convection. As a consequence, the amount of convection decreased and the low-level circulation center became exposed. A weakening Tropical Depression 21W suddenly started tracking northwestward. At 280600Z, with the low-level circulation center separated more than one degree to the west of the convection, the final warning was issued. JTWC did not receive any reports of damage caused by the tropical cyclone.